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U.S. ENVIRONMENTAL PROTECTION AGENCY

TECHNICAL ENFORCEMENT SUPPORT
AT
HAZARDOUS WASTE SITES

CONTRACT NO. 68-W9-0007
TES X

Metcalf & Eddy, Inc.



0724



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SUPERFUND RECORDS

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METCALF & EDDY
10502 N.W. Ambassador Drive
Suite 210
Kansas City, MO 64153
Tel: (816) 891-9261
Fax: (816) 891-6329

LETTER OF TRANSMITTAL

11 Feb 92

270002

Date

Our Job No.

Attention

Re:

Chevron Chemical Company

TO

Cathy Barrett
US EPA Region VII
726 Minnesota Ave
KCK 66401

WE ARE SENDING YOU

☒ Attached

☐ Under separate cover via

the following items:

☐ Prints

☐ Sepias

☐ Copy of letter

☐ Specifications

☐ Shop drawings

☐

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1	11 Feb 92			Groundwater Issues

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REMARKS

Copies to

Signed:

K. Laray Hall

Site: Chevron Chem
ID: Mo0006272355
Date: 2.3
Other: WWC
2-10-92

**ENVIRONMENTAL PROTECTION AGENCY
TECHNICAL ENFORCEMENT SUPPORT
AT
HAZARDOUS WASTE SITES**

TES X

**CONTRACT NO 68-W9-0007
WORK ASSIGNMENT # C07002
EPA SS/ID NO. 7PL4**

REVIEW OF

**CHEVRON CHEMICAL COMPANY
JANUARY 14, 1992 LETTER ADDRESSING
GROUNDWATER ISSUES
ORTHO-CHEVRON CHEMICAL COMPANY
MARYLAND HEIGHTS, MISSOURI**

U.S. EPA REGION VII

**METCALF & EDDY, INC.
PROJECT NUMBER: 270002.0002.003**

**WORK PERFORMED BY:
TETRA TECH, INC.
10 CAMBRIDGE CIRCLE DRIVE SUITE 130
KANSAS CITY, KANSAS 66103**

PROJECT NUMBER: TC-4802

February 10, 1992

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1.0 INTRODUCTION

The U.S. EPA Work Assignment Manager (WAM) requested the TES X Contractor to review the Chevron Chemical Company January 14, 1992 letter addressing groundwater issues at the Ortho-Chevron Chemical Company in Maryland Heights, Missouri (Appendix A). This letter was reviewed as part of the tasks assigned under the TES X Contract Number 68-W9-0007, Work Assignment C07002.

In order to facilitate the evaluation of Chevron's groundwater monitoring proposals, the TES X representative constructed a series of east-west cross-sections across the site. For TES X purposes, the "site" includes the areas that Chevron refers to as "site" and "off-site". Figure 1 shows the locations of the three east-west cross-sections and the wells projected onto the east-west lines. All figures are attached as Appendix B. These cross-sections are based on the boring logs and well installation diagrams prepared by Woodward-Clyde Consultants (WCC) and provided to the TES X representative by the U.S. EPA. Table 1 (Appendix B) is a summary of the relevant well information used in preparing these cross-sections. Historical groundwater data tables from regularly monitored wells are attached as Appendix C.

Figure 2 is cross-section A-A', and is the furthest north cross-section. Figure 3 is cross-section B-B', and includes the portion of the site that has been found to be the most highly contaminated. Figure 4 is cross-section C-C', and includes the upgradient background wells and well OWC-20, which was found to contain high concentrations of trichloroethene (TCE) in 1991. As volatile organic compounds (VOCs) data for this well are not available prior to 1991, the presence of TCE in previous sampling events cannot be determined. Figures 5 through 7 present the three cross-sections annotated with the compounds (other than the common laboratory contaminant, acetone) historically detected in the wells. The compounds depicted as being present in the wells are based on the historical groundwater data shown in the tables prepared by the TES X representative for the monitoring wells (Appendix C). As not all data from all years are available to the TES X representative, these tables and, consequently, these figures may not be complete. For wells not presently monitored, only the lindane data from the WCC April 1991 report on the Fate and Transport of Lindane were available to TES X.

2.0 COMMENTS

The following are the TES X representative's comments and recommendations on Chevron's January 14, 1992 letter regarding additional groundwater assessment proposals for the Ortho-Chevron Chemical facility.

- o Proposal No. 1 states that Chevron plans to "install two additional deep (top of bedrock) groundwater monitoring wells to further investigate and evaluate the potential extent of lindane contamination downgradient of the site." It is unclear from this sentence whether Chevron is proposing to complete these wells in the upper part of the limestone bedrock, or in the clay on top of the limestone. To be consistent with Chevron's previous terminology, a "deep" well would be into the limestone; however, this should be clarified.

The groundwater gradient has been found to be in a generally northwest direction. The location proposed for well OWC-29 is northwest (down-gradient) from well OWC-25, which has not contained detectable concentrations of lindane since 1989. In order to define the downgradient lindane contamination, a better location for OWC-29 would be downgradient of well OWC-28, which has consistently contained lindane concentrations of greater than 3.0 $\mu\text{g}/\ell$. Due to the possibility of groundwater flow along fractures in the limestone bedrock, the regional fracture pattern should be reviewed. A location downgradient and/or along any definable fracture trend from well OWC-28 would probably provide more useful data than a location downgradient from well OWC-25.

The location selected for proposed well OWC-30 would be useful for filling in the data-gap at that portion of the site. Other than deep well OWC-2, which has been found to contain total arsenic concentrations in excess of the 50 $\mu\text{g}/\ell$ Maximum Contaminant Level (MCL), no contamination of the limestone bedrock is known to be present upgradient from this proposed location. Due to the proximity of the railroads and trucking operations to well OWC-2, the groundwater from this well may not be representative of "background" conditions.

Another deep well location that would provide useful information on the site would be downgradient of well OWC-27, which has been found to contain lindane, TCE, and TCE's breakdown product 1,2-dichloroethene (1,2-DCE). A TCE plume apparently exists in the limestone bedrock between wells OWC-20 and OWC-27. It is uncertain where this plume originates, and a well upgradient (off site, if possible) from well OWC-20 might also prove to be valuable. As TCE is heavier than water, wells installed with the intent of defining the vertical extent of the TCE contamination should be screened at the base of the limestone aquifer. As TCE has also been detected in shallow well OWC-19, sampling the upgradient shallow wells OWC-3 and OWC-4 for volatile organic compounds (VOCs) would be useful to determine whether a TCE plume also exists in the silty clay loess.

It is apparent from cross-section A-A' (Figures 2 and 5) that the extent of shallow contamination has not been defined for the northern (Chevron's "off-site") area. According to the installation diagram, well OWC-24 has only a one-foot screen near the base of the silty clay (loess); thus this well is of very limited value in defining the extent of contamination in that portion of the site. A shallow well near or downgradient from well OWC-28 and a shallow well near proposed well OWC-30 would be useful. One well should be screened in the upper silty clay, and the other in the middle portion of the silty clay. If two wells were installed, then five-foot would be a minimum acceptable screen. If only one well were installed, it should be screened over a 10-foot interval.

The western extent of contamination has not been defined for either the shallow or the deep aquifers. Shallow and deep wells to the west of the unnamed building to the west of the site would be useful for this purpose.

- o Proposal 2 concerns the wells to be monitored on a quarterly and semi-annual basis. This is the current monitoring program with the addition of

the new wells to be monitored quarterly, and the deep background well added to the list of wells monitored semi-annually. The addition of wells OWC-3, OWC-4, and OWC-9 to the list of wells monitored semi-annually would eliminate the data gaps in those portions of the site. The only data the TES X representative has for these wells are from the WCC report on the "Fate and Transport of Lindane" (WCC, April 1991). According to that report, lindane has been detected in all of these wells.

This proposal lists the parameters for which the monitoring wells will be analyzed, and proposes that chlordane, heptachlor, endrin, methoxychlor, and toxaphene be deleted from the list of parameters for offsite monitoring "since they have never been documented as a (sic) contaminant of concern on-site and have not been observed in the off-site monitoring wells. Because they are not present in the groundwater on-site, there is little, if any, potential for ever finding them in the off-site wells." According to the historical data available to TES X, chlordane (~~proposed~~ MCL 2.0 $\mu\text{g}/\ell$) was detected in well OWC-19 at 0.45 $\mu\text{g}/\ell$ in 1988; heptachlor (~~proposed~~ MCL 0.4 $\mu\text{g}/\ell$) was detected in OWC-19 at 0.45 $\mu\text{g}/\ell$ in the June 1991 U.S. EPA split sample; endrin (MCL ~~0.2~~ 2 $\mu\text{g}/\ell$) was detected in well OWC-12A at 2.3 $\mu\text{g}/\ell$ in the June 1991 U.S. EPA split sample; methoxychlor (MCL ~~100~~ 100 $\mu\text{g}/\ell$) was detected in well OWC-12A at 2.2 $\mu\text{g}/\ell$ in the June 1990 U.S. EPA split sample; toxaphene has not been detected. Thus endrin and heptachlor have been detected on site at concentrations above the MCLs. ~~proposed~~ MCLs. Well OWC-12A is a deep well completed in the limestone bedrock, and well OWC-19 is a shallow well completed in the silty clay (loess). Well OWC-28 is probably downgradient of OWC-12A, and no endrin has been detected to date in that well. No heptachlor has been detected in well OWC-24, downgradient of well OWC-19. However, OWC-24 is screened over only a one-foot interval near the base of the silty clay, and thus is not necessarily representative of the middle or upper silty clay. The TES X Contractor recommends that monitoring for endrin and heptachlor be continued at present for the offsite wells, particularly for the new wells.

- o Proposal 3 states that "the current concentrations of lindane observed off-site in OWC-27 and OWC-28 are below the current MCL of 4 $\mu\text{g}/\ell$ ". According to the Safe Drinking Water Act Hotline (1-800-426-4791), the MCL for lindane is presently 4 $\mu\text{g}/\ell$, but will decrease to 0.2 $\mu\text{g}/\ell$ on July 30, 1992. In 1991, well OWC-27 contained lindane at a maximum concentration of 0.23 $\mu\text{g}/\ell$, and well OWC-28 contained a maximum lindane concentration of 4.1 $\mu\text{g}/\ell$. Thus, both wells OWC-27 and OWC-28 have had lindane concentrations at or above the proposed MCL, and in the case of well OWC-28 the lindane concentration was above the existing MCL.

Chevron proposes to monitor the offsite wells for six quarterly sampling events (18 months) and then evaluate the results. An evaluation of the results in 18 months is acceptable; however, Chevron's implication that the wells will cease to be monitored at that time should be addressed as no time limitation is specified for Chevron's data review, evaluation, and proposal for future work. Monitoring of all wells should continue on at least a semi-annual basis while the data evaluation is underway.

Chevron also states that they do not feel it is appropriate to sample private wells in the area at this time as the concentrations of lindane detected in the offsite wells are below the current MCL of 4 $\mu\text{g}/\ell$. Again, the MCL will become 0.2 $\mu\text{g}/\ell$ on July 30, 1992, and the lindane concentrations for wells OWC-27 and OWC-28 have been at or above that proposed MCL during 1991. However, according to the Endangerment Assessment report (WCC November 6, 1989), there are no active wells within two miles downgradient of the facility. This should be verified by a new search of water well records at the Missouri Department of Natural Resources (MDNR). If it is confirmed that no drinking water wells exist within two miles downgradient of the site, then sampling of the private wells could probably be delayed for 18 months.

Chevron states their intention is to install and sample these wells concurrent with the March 1992 sampling event. If the U.S. EPA desires TES X oversight of the installation, development, and sampling of these wells, at least two weeks notice should be requested from Chevron. In the event oversight is required, Chevron should be requested to provide their revised Work Plan, Field Sampling Plan, and Quality Assurance Plan for this event.

3.0 SUMMARY

It is recommended that the location proposed by Chevron for well OWC-29 be re-evaluated and possibly moved to the east so that it will be more likely to encounter lindane contamination downgradient from well OWC-28. Wells OWC-29 and OWC-30 are proposed to be deep wells, but it is not clear whether they are to be completed into or on top of the limestone bedrock. These wells should be screened in the limestone bedrock at depths comparable to wells OWC-25, OWC-27, and OWC-28.

The proposed location for OWC-30 is acceptable; however, it is not a critical location. If only two wells can be installed at this time, it is more important to delineate the horizontal extent of the TCE contamination downgradient from well OWC-27. A well screened at a depth comparable to that in OWC-27 should be installed downgradient of OWC-27. In order to define the vertical extent of the TCE contamination, another well should eventually be installed that is screened at the base of the limestone aquifer. The location for this well should either be adjacent to OWC-27 or to the downgradient well should it prove to contain TCE contamination. A deep well located upgradient from well OWC-20 is also recommended to help evaluate the TCE contamination.

Two new, shallow, downgradient wells (adjacent to or downgradient of OWC-28 and OWC-30) should be added in an effort to delineate the shallow contamination on the northern portion of the site. In addition, the western extent of contamination also remains to be defined, and both shallow and deep wells to the west of the site are recommended.

It is also recommended to add wells OWC-3, OWC-4, and OWC-9 to the semi-annual groundwater monitoring program, and not to delete the pesticides endrin and heptachlor from the offsite monitoring parameters at this time.

APPENDIX A

The Chevron January 14, 1992 Groundwater Proposal Letter



Chevron Chemical Company

6001 Bollinger Canyon Road, San Ramon, California
Mail Address: P.O. Box 5047, San Ramon, CA 94583-0947

RECEIVED

JAN 25 1992

January 14, 1992

REMED SECTION

Groundwater Issues
Maryland Heights, Missouri

Ms. Catherine Barrett
Remedial Section
Waste Management Division
U.S. Environmental Protection Agency
Region VII, Superfund Branch
726 Minnesota Avenue
Kansas City, Kansas 66101

Dear Ms. Barrett:

This letter is written in response to the U.S. Environmental Protection Agency's (EPA's) letter of March 7, 1991, our meeting of April 25, 1991, and subsequent correspondence and communications since these dates regarding the Chevron Chemical Company facility in Maryland Heights, Missouri.

Following continued review of the analytical data and ongoing status of the project, now that the remedial actions for surface soil at the site have been completed, Chevron proposes to undertake the following actions with respect to groundwater at the site:

1. Install two additional deep (top of bedrock) groundwater monitoring wells to further investigate and evaluate the potential extent of lindane contamination downgradient of the site. These wells will be installed in the locations shown in the attached figure (Figure 1) in accordance with our approved Work Plan, Quality Assurance Plan, Field Sampling Plan, and Health and Safety Plan, providing that access from the appropriate property owners can be obtained.
2. Continue to conduct quarterly and semi-annual groundwater monitoring at the facility. Monitoring wells to be sampled on a quarterly basis will include:
 - OWC-27;
 - OWC-28;
 - OWC-29 (proposed well); and
 - OWC-30 (proposed well)

Monitoring wells to be sampled on a semi-annual basis will include:

- OWC-1;
- OWC-2 (existing well added to network);
- OWC-12A;
- OWC-14;
- OWC-15;
- OWC-16;
- OWC-17;
- OWC-18;
- OWC-19;
- OWC-20;
- OWC-24;
- OWC-25; and
- OWC-26.

This proposal is consistent with the currently approved groundwater monitoring network and frequency, and includes the addition of two new off-site wells and the inclusion of a currently existing deep background well (OWC-2).

Parameters of analysis will include:

- | | |
|----------------------------|------------------------------------|
| • Volatile Organics | • Metals |
| TCL Volatile Organic List | Total Arsenic
Dissolved Arsenic |
| • Pesticides | • Herbicides |
| Aldrin | 2,4-D |
| Dieldrin | 2,4,5-T |
| α -BHC | 2,4,5-TP |
| β -BHC | |
| δ -BHC | |
| Γ -BHC | |
| 4,4'-DDT | |
| 4,4'-DDD | |
| 4,4'-DDE | |

Chevron is proposing to delete chlordane, heptachlor, endrin, methoxychlor, and toxaphene from the list of off-site parameters since they have never been documented as a contaminant of concern on-site and have not been observed in the off-site monitoring wells. Because they are not present in the groundwater on-site, there is very little, if any, potential for ever finding them in the off-site wells.

3. The current concentrations of lindane observed off-site in OWC-27 and OWC-28 are below the current MCL of 4 ug/L. Moreover, there is no documented use of groundwater in the immediate area and thus no pathway for exposure. As a result, Chevron proposes to conduct the monitoring for a period of 18 months (six quarterly events) following the installation of the new wells.

At that time, Chevron will review and evaluate the data with EPA and make a joint determination on the potential need to address off-site groundwater remediation. The 18-month period will also allow Chevron and EPA time to evaluate whether the passive remedial actions conducted on-site (i.e., surface capping and limited removal) have been effective in improving groundwater quality.

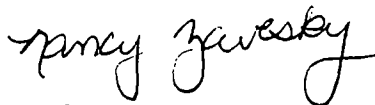
Concurrent with the monitoring activities, Chevron plans to evaluate long-term alternatives to minimize further off-site migration of contaminated groundwater.

With respect to private well sampling, the concentrations of lindane observed off-site to date are below the current MCL and the areas of contamination appear to be limited. As a result, Chevron does not believe it is appropriate, at this time, to undertake sampling of private wells in the area. Following installation and review of data from the proposed wells (OWC-29 and OWC-30), it may be appropriate for Chevron, EPA, and the Missouri Department of Natural Resources (MDNR) to revisit this issue.

Our next groundwater sampling event is scheduled for mid-March 1992. With EPA's approval of the proposals contained in this letter, Chevron intends to install and sample the proposed wells concurrent with this event.

If you have any questions, please feel free to contact me.

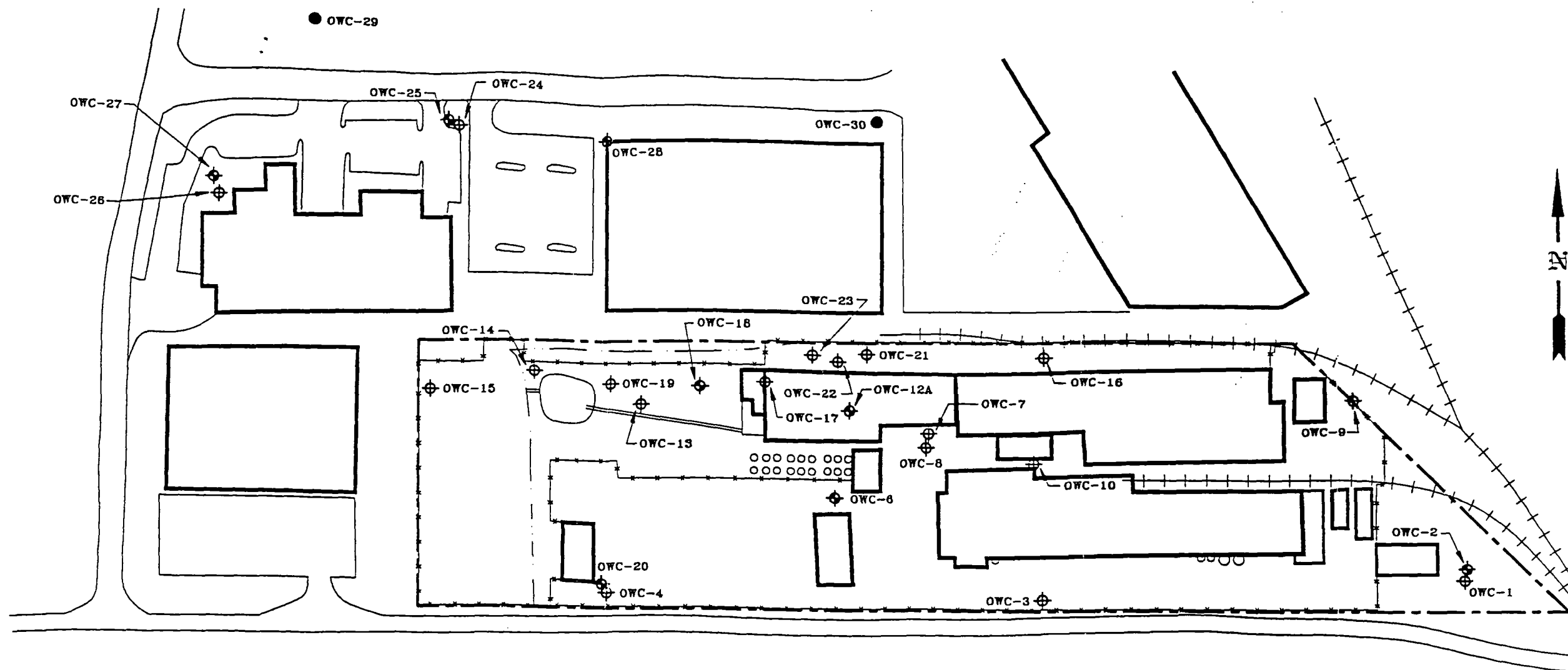
Sincerely,



N. S. Zavesky
Environmental Engineer

NZ:bam

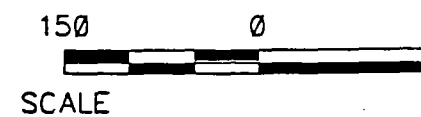
Attachment: Figure 1



LEGEND:

MONITORING WELL LOCATION AND NUMBER

- ⊕ OWC-1 SHALLOW MONITORING WELL
- ⊕ OWC-2 DEEP MONITORING WELL
- OWC-29 PROPOSED MONITORING WELL LOCATIONS
- SITE BOUNDARY



DAD FILE: OCSITE7	ORTHO-CHEVRON MARYLAND HEIGHTS	
	Woodward-Clyde Co Engineers, Geologists, And Environ	
	BASE MA	
	DRAWN: M.A.L.	DATE: 01/08/92

APPENDIX B

Geological and Chemical Cross-Sections

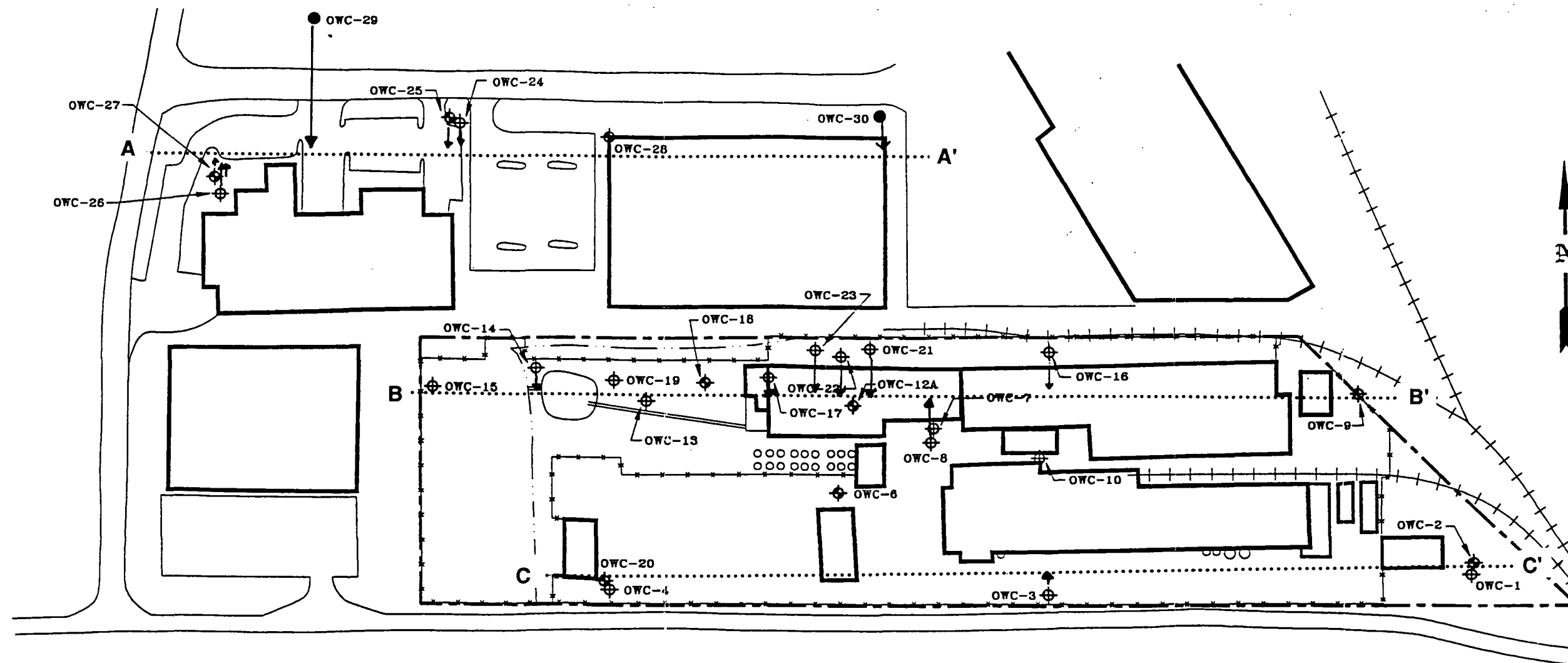
Table 1: Information Used to Prepare Cross-Sections for Chevron Chemical Company, Maryland Heights Missouri.

Well No.	Grd. Elev.	T/Csg. Elev	Well Depth	Screen Depth	Lithologic Descriptions from WCC Boring Logs
1	541	542.53	23	13 - 23	0-16': SC; 16-23': PC.
2	541	541	69.5	59.5 - 69.5	0-16': SC; 16-35': PC; 35-46': Clay with fine Sand 46-47.5': Ls; 47.5-61.5': calcareous Sh; 61.5-69.5': Ls.
3	529	531.22	35	15 - 35	0-4': Fill; 4-19': SC; 19-35': PC; 35': Auger Refusal, T/Ls (?)
4	519	520.55	29.5	9.5 - 29.5	0-4': Fill; 4-19': SC; 19-29.5': PC; 29.5': Auger Refusal, T/Ls (?)
5	515	N/A	26.5	15 - 25	0-3': Fill; 3-22': SC; 22-26.5': PC.
6	523	524.45	26.5	8 - 25	0-4.5': Fill; 4.5-19.5': SC; 19.5-26.5': PC.
7	523	524.19	17	7 - 17	0-6': Fill; 6-17': SC.
8	523	524.61	27.5	18.5 - 27.5	0-5.5': Fill; 5.5-23': SC; 23-27.5': PC.
9	532	533.76	44	12 - 32	0-2.5': Fill; 2.5-13': SC; 13-28.5': PC; 28.5-44': shly/sdy Clay; 44': Auger Ref. T/Ls (?)
10	528	533.08	36.8	13 - 28	0-5.5': Fill; 5.5-33': SC; 33-36.8': PC; 36.8': Ls.
11	524	N/A	35	18 - 28	0-6': Fill; 6-26': SC; 26-35': PC; 35': Auger Refusal, T/Ls (?)
12	524	N/A	40.3	30.3 - 40.3	0-6': Fill; 6-22': SC; 22-31': PC; 31-40.3': Ls with clay seams.
12A	523.2	524.56	48	41 - 46	0-6': Fill; 6-24': SC; 24-31': PC; 31-48': Ls with clay seams.
13	516	517.54	21.5	10 - 20	0-3.5': Fill; 3.5-20': SC; 20-21.5': PC.
14	513	512.89	23.5	12 - 22	0-2.5': Fill; 2.5-18.5': SC; 18.5-23.5': PC.
15	514	515.2	21.5	10 - 20	0-14': SC; 14-21.5': PC.
16	522.5	522.97	19	9 - 19	0-3.5': Fill; 3.5-19': SC.
17	522.1	523.23	18	8 - 18	0-7': Fill (with cinders); 7-18': SC.
18	519.2	519.68	76	56 - 76	0-7': Fill; 7-22': SC; 22-27': PC; 27-37': weathered/clayey Ls; 37-76: fractured Ls.
19	516	517.03	18	8 - 18	0-4': Fill; 4-18': SC.
20	518.8	521.67	48.5	42 - 47	0-2': Fill; 2-19': SC; 19-28': PC; 28-48.5': Ls with clay.
21	523.7	525.36	11	6.6 - 10.6	0-6': Fill; 6-11': SC.
22	523.8	525.67	20	15.6 - 17.6	0-6': Fill; 6-20': SC.
23	523.6	525.07	26	23.2 - 25.2	0-6': Fill; 6-21': SC; 21-26': PC.
24	513.25	515.18	21	17.8 - 18.8	0-3.5': Fill; 3.5-21': SC.
25	513.34	515.18	48	36.2 - 46.2	0-6': Fill; 6-22': SC; 22-28': PC; 28-33': weathered Ls; 33-48': Ls with clay seams.
26	514.38	516.24	21.5	10.8 - 19.8	0-15.5': SC; 15.5-21.5': PC.
27	513.95	516.1	47	34.2 - 43.2	0-15.5': SC; 15.5-28': PC; 28-45': Ls; Sh parting at 31.5'.
28	519.82	522.07	50	37.2 - 46.2	0-8.5': Fill; 8.5-32.5': SC; 32.5-50': Ls; Sh parting at 47.5'.

Notes: Grd. Elev. = USC&GS datum elevation at ground surface. T/Csg. Elev. = USC&GS datum elevation at top of well casing.

Lithologic Descriptions: SC = Silty Clay (low plastic) PC = Plastic Clay (highly plastic) Ls = Limestone Sh = Shale

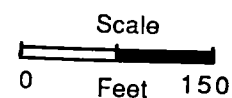
Well information from Woodward-Clyde Consultants reports. Boring logs used for depth/lithology; Installation diagrams for screen and ground elevation. Top of casing elevations from WCC report on groundwater monitoring.



LEGEND:

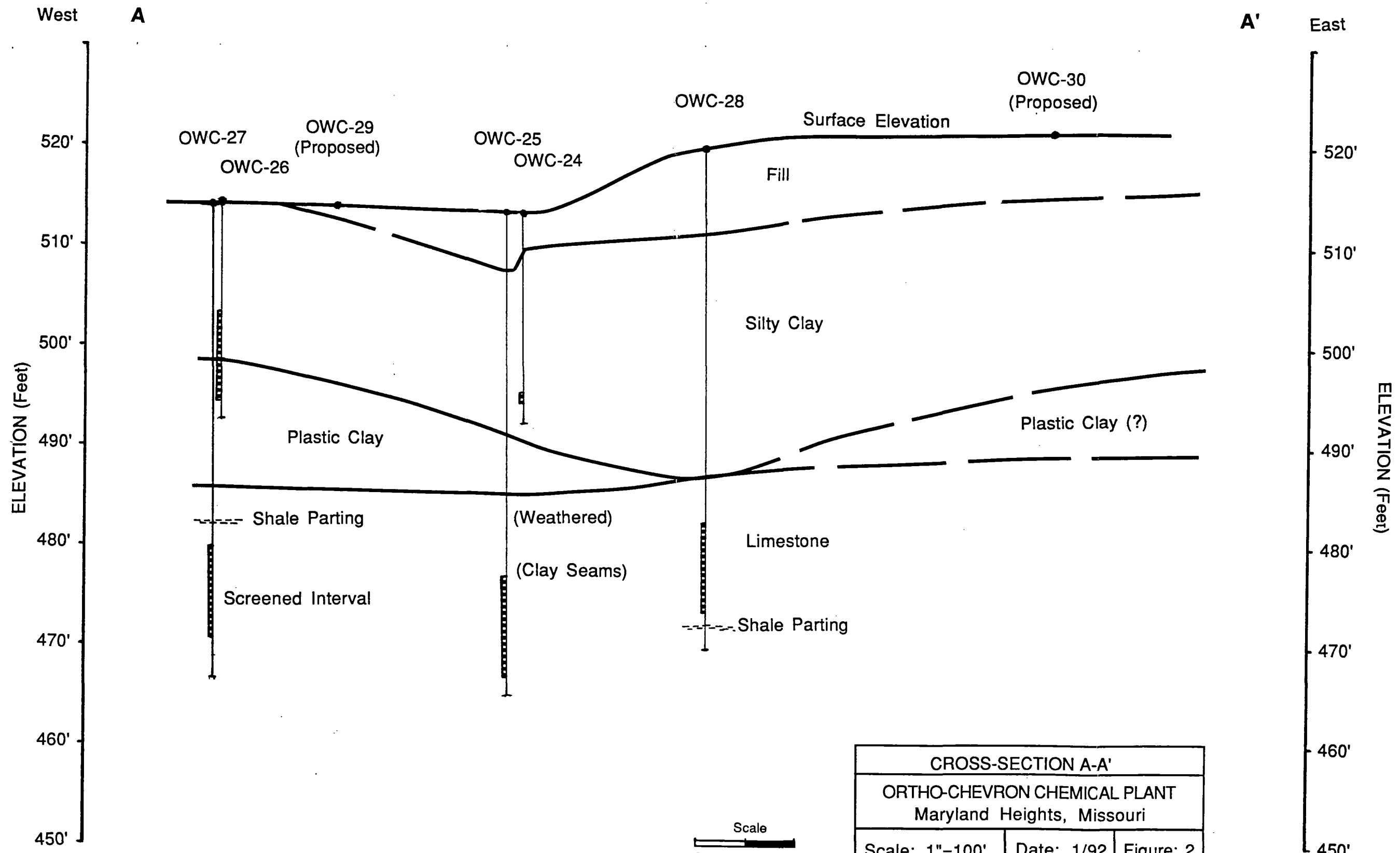
MONITORING WELL LOCATION AND NUMBER

- ⊕ OWC-1 SHALLOW MONITORING WELL
- ⊙ OWC-2 DEEP MONITORING WELL
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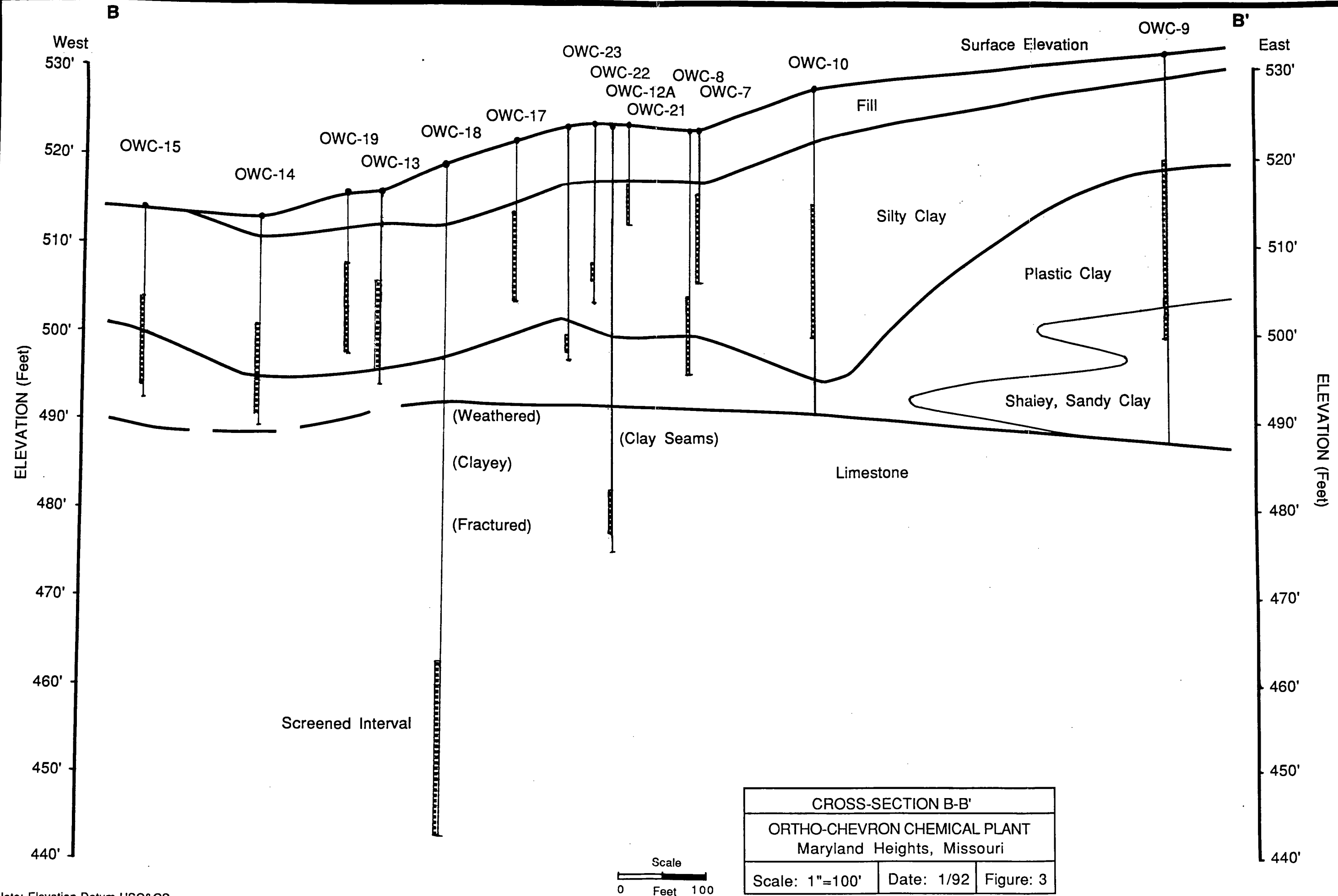


..... CROSS-SECTION

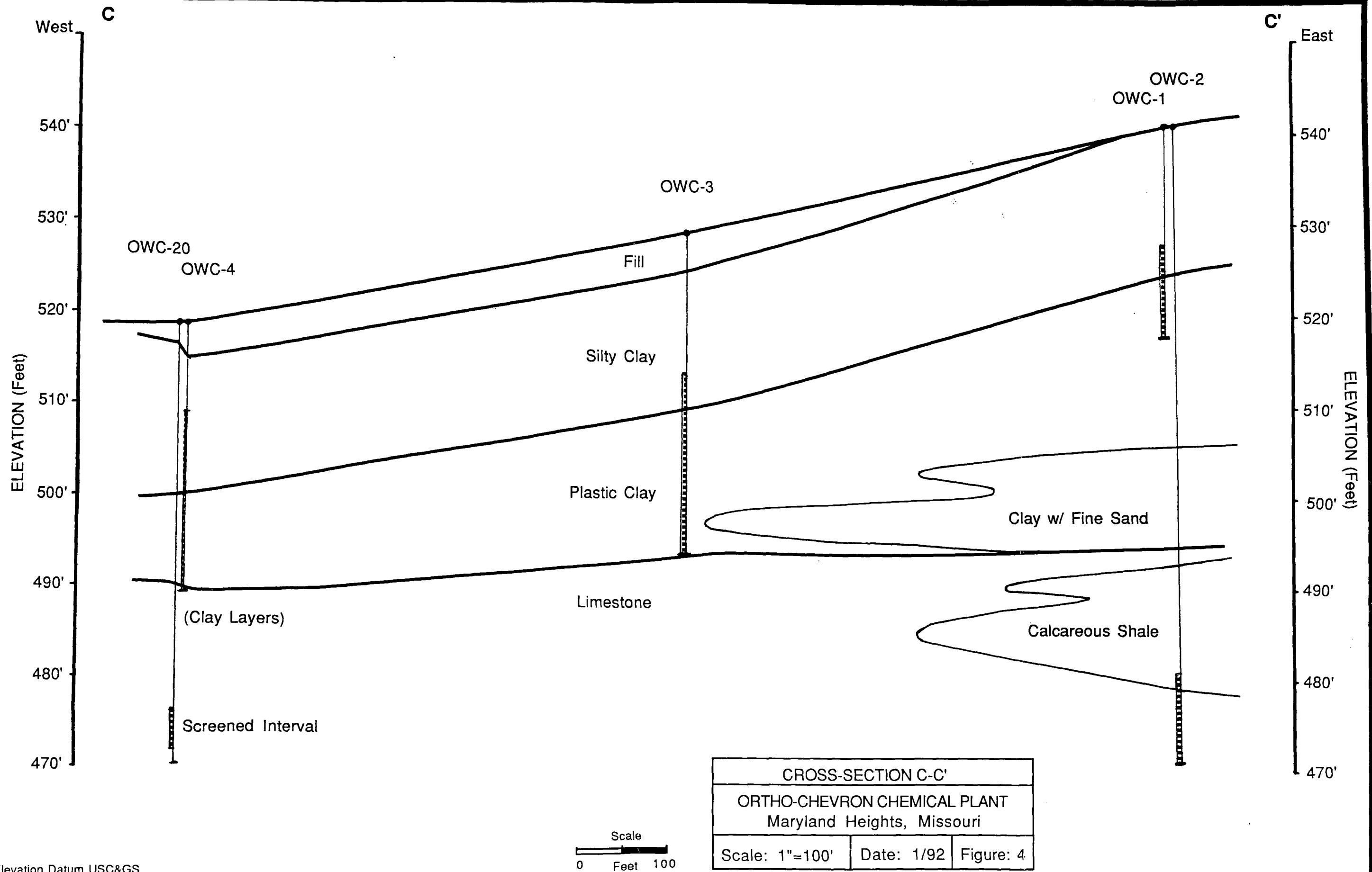
CROSS-SECTION LOCATIONS		
ORTHO-CHEVRON CHEMICAL PLANT		
Maryland Heights, Missouri		
Ref.: Woodward-Clyde Consultants, 1/92		
Scale: 1" = 150'	Date: 1/92	Figure: 1

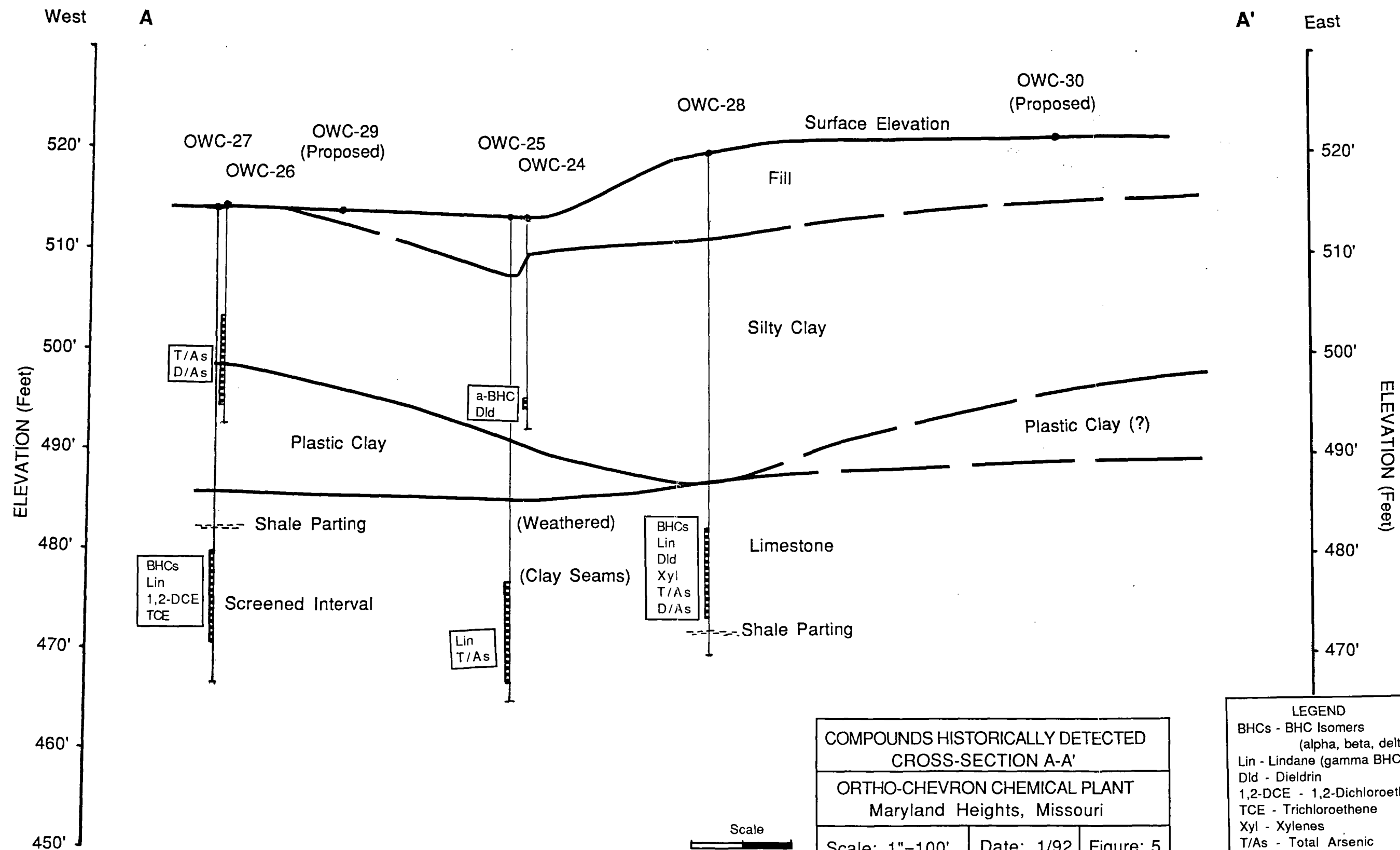


Note: Elevation Datum USC&GS

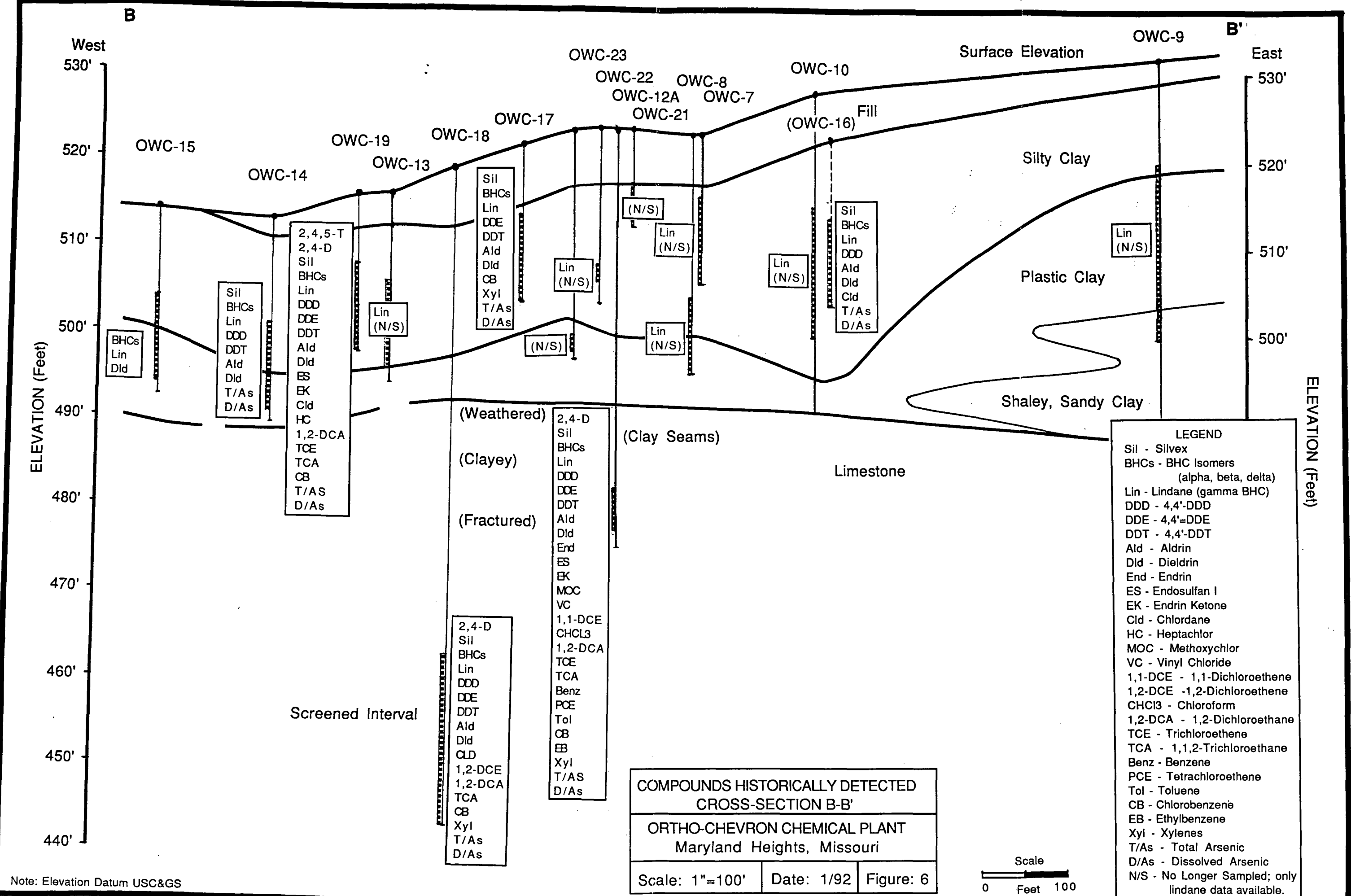


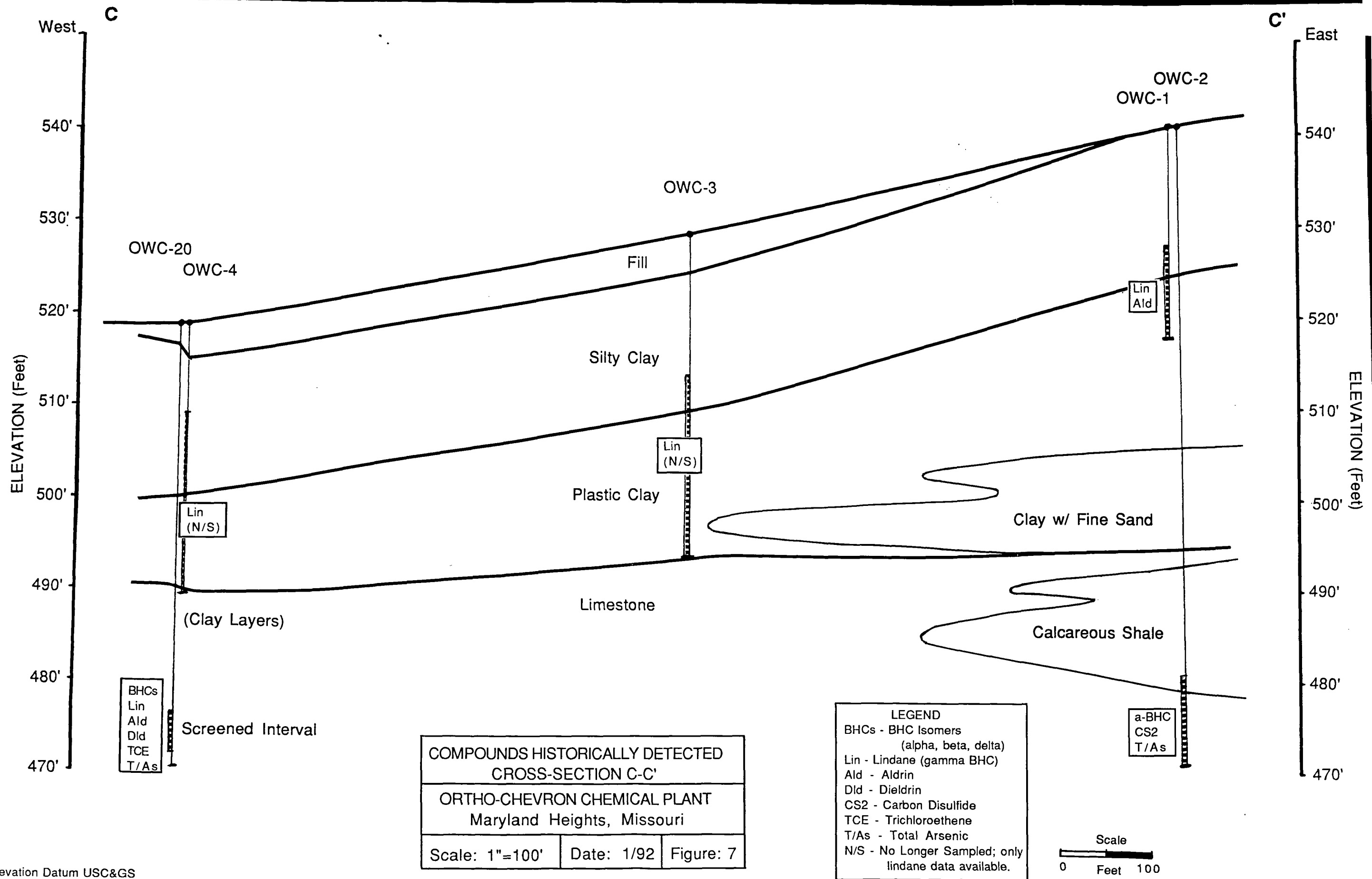
Note: Elevation Datum USC&GS





Note: Elevation Datum USC&GS





APPENDIX C

Historical Groundwater Data

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-1

Analyte (ug/L)	MCL	1985	1986	1987	1988	1989	1990	1991	1992
Herbicides									
2,4,5-T				1U	1U		.2U	.2U	
2,4-D	100 [70]			1U	1U		1.2U	1.2U	
2,4,5-TP (Silvex)	50						.17U	.17U	
Pesticides									
alpha-BHC							.05U	.05U	
beta-BHC							.05U	.05U	
delta-BHC							.05U	.05U	
gamma-BHC (Lindane)	4[0.2]		.1U	.1U/1.4	.1U/.16	0.053	.05U	.05U	
4,4'-DDD				.1U	.1U		.1U	.1U	
4,4'-DDE				.1U	.1U		.1U	.1U	
4,4'-DDT				.1U	.1U		.1U	.1U	
Aldrin				.1U/.40	.1U		.5U	.05U	
Dieldrin				.1U	.1U		.1U	.1U	
Endrin	0.2								
Chlordane	[2]								
Heptachlor	[.4]								
Methoxychlor	100 [400]				.5U				
Toxaphene	5 [3]				5U				
Volatile Organics									
Acetone								10U	
Chlorobenzene								5U	
1,2-Dichloroethene	[170*]								
1,1,2-Trichloroethane								5U	
Trichloroethene	5							5U	
Xylene	[10,000]			1U	1U/5U		5U	5U	
Metals									
Total Arsenic	50						5U	5U	
Dissolved Arsenic				10U	10U		5U	5U	

Notes: Minimum/Maximum concentrations are shown when more than one sampling event per year.

MCL = Maximum Contaminant Level; [Proposed MCL].

U = Undetected at value where so indicated.

* Proposed MCL of 170 for total 1,2-Dichloroethene (70 for Cis- and 100 for Trans-).

Historical Groundwater Data from the Ortho-Chevron Facility

Well: OWC-2

Analyte (ug/L)	MCL	1987	1988	1989	1990	1991
Herbicides						
2,4,5-T					.2U	.32U
2,4-D	100 [70]				1.2U	1.9U
2,4,5-TP (Silvex)	50				.17U	.27U
Pesticides						
alpha-BHC					.05U	0.059
beta-BHC					.05U	.05U
delta-BHC					.05U	.05U
gamma-BHC (Lindane)	4[0.2]				.05U	.05U
4,4'-DDD					.1U	.1U
4,4'-DDE					.1U	.1U
4,4'-DDT					.1U	.1U
Aldrin					.05U	.05U
Dieldrin					.1U	.1U
Endrin	0.2				.1U	
Chlordane	[2]				.05U	
Heptachlor	[.4]				.05U	
Methoxychlor	100 [400]				.5U	
Toxaphene	5 [3]				5U	
Volatile Organics						
Vinyl Chloride	2				U	10U
Acetone					U	U
Carbon Disulfide					15	U
1,1-Dichloroethene	7					U
1,2-Dichloroethene	[170*]					5U
Chloroform						U
1,2-Dichloroethane	5				5U	5U
Trichloroethene	5					5U
1,1,2-Trichloroethane					5U	5U
Benzene					5U	U
Tetrachloroethene	[5]					U
Toluene						U
Chlorobenzene	[100]				5U	5U
Ethylbenzene	[700]				5U	U
Xylene	[10,000]				5U	5U
Metals						
Total Arsenic	50				320	59
Dissolved Arsenic					5U	NA

Notes:

Minimum/Maximum concentrations are shown when more than one sampling event per year.

MCL = Maximum Contaminant Level; [Proposed MCL].

* Proposed MCL of 170 ug/L = 70 for Cis plus 100 for Trans.

U = Undetected at value where so indicated.

Historical Groundwater Data from the Ortho-Chevron Facility

Well: OWC-12A

Analyte (ug/L)	MCL	1987	1988	1989	1990	Jun-90	1991	Jun-91
Herbicides								
2,4,5-T		1U	1U		2U/20U	[1U]	.4U/.8U	[3.9U]
2,4-D	100 [70]	1U/24.6	1U/11		12U/120U	[I]	2.4U/4.8U	[15U]
2,4,5-TP (Silvex)	50				1.7U/19	[I]	1.8/3,{2/2.1}	[3.4]
Pesticides								
alpha-BHC					160	[200]	180/210,{170/220}	[190]
beta-BHC					21	[18]	33/100U {31}	[24]
delta-BHC					160	[170]	240/250,{230/250}	[210]
gamma-BHC (Lindane)	4[0.2]	157/494	75.3/870	420/430	260/350	[340]	240/350,{230/360}	[270]
4,4'-DDD		.48/3.09	.1U/2.01	3	20U/100U	[2.6]	40U/200U	[3]
4,4'-DDE		.1U/1.28	.1U	1.2	20U/100U	[.82]	40U/200U	[1.7U]
4,4'-DDT		.1U/1.99	.1U/10	1.7/12	20U/100U	[1.6]	40U/200U	[3.3]
Aldrin		.1U	.1U/18	3.5/6.2	10U/50U	[.5U]	20U/100U	[3.5]
Dieldrin		.1U/5.65	.1U/.26	3.6	20U/100U	[1.7]	40U/200U	[3.9]
Endrin	0.2				20U	[.91]	NA	[2.3]
Endosulfan I						[0.05U]		[1.7]
Endrin Ketone						[1.1]		
Chlordane	[2]				10U	[.5U]	NA	[NA]
Heptachlor	[.4]				10U		NA	[.83U]
Methoxychlor	100 [400]				100U	[2.2]	NA	
Toxaphene	5 [3]				1000U		NA	[17U]
Volatile Organics								
Vinyl Chloride	2				U	[14J]	U	[50U]
Acetone					U	[10U]	200U/500,{720}	[50U]
Carbon Disulfide					25U		U	[25U]
1,1-Dichloroethene	7				U	[7J]	U	[25U]
1,2-Dichloroethene	[170*]				U		100U/160U	[25U]
Chloroform					U	[26J]	U	[25U]
1,2-Dichloroethane	5				31	[39J]	100U	[25U]
Trichloroethene	5				U	[5J]	100U/160U	[25U]
1,1,2-Trichloroethane					84	[99J]	100U/160U	[77]
Benzene					100	[120J]	U	[95]
Tetrachloroethene	[5]				U	[7J]	U	[25U]
Toluene					U	[5J]	U	[25U]
Chlorobenzene	[100]				650	[810J]	610/850,{600/850}	[660]
Ethylbenzene	[700]				130	[100J]	U	[110]
Xylene	[10,000]	730/840	620/880		620/720	[960J]	720,{400/700}	[430]
Metals								
Total Arsenic	50				5U	[10U]	7.8,{5U}	[10U]
Dissolved Arsenic		10U	10U/40		5U	[10U]	5U,{5U}	[10U]

Notes:

Minimum/Maximum concentrations are shown when more than one sampling event per year.

{Duplicate Sample} Not shown where non-detect at same detection limits.

[U.S. EPA Split Sample]

MCL = Maximum Contaminant Level; [Proposed MCL].

* Proposed MCL of 170 ug/L = 70 for Cis plus 100 for Trans.

U = Undetected at value where so indicated.

J = Estimated Value.

I = Invalidated Data.

NA = Not Analyzed.

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-14

Analyte (ug/L)	MCL	1985	1986	1987	1988	1989	1990	1991	1992
Herbicides									
2,4,5-T				1U	1U		.4U/1U	.2U	
2,4-D	100 [70]			1U	1U		.6U/2.4U	1.2U	
2,4,5-TP (Silvex)	50						1.7/2.6	0.58/0.62	
Pesticides									
alpha-BHC							0.7	0.75/0.99	
beta-BHC							0.6	0.77/1.2	
delta-BHC							0.39	0.3/0.41	
gamma-BHC (Lindane)	4[0.2]			.44/1.6	.74/2.71	0.55	.25/.26	0.27/.034	
4,4'-DDD				.1U/.83	.1U/.105		.1U/.4U	.2U	
4,4'-DDE				.1U	.1U		.1U/.4U	.2U	
4,4'-DDT				.1U	.1U	0.26	.1U/.4U	.2U	
Aldrin				.1U/.21	.1U/4.27	D (<2.5)	.05U/.2U	.1U	
Dieldrin				.1U/.59	.1/5.7	D (.14-.26)	.47/.5	0.39/0.54	
Endrin	0.2								
Chlordane	[2]								
Heptachlor	[.4]								
Methoxychlor	100 [400]				.5U				
Toxaphene	5 [3]				5U				
Volatile Organics									
Acetone								10U	
Chlorobenzene								5U	
1,2-Dichloroethene	[170*]								
1,1,2-Trichloroethane								5U	
Trichloroethene	5							5U	
Xylene	[10,000]			1U	1U/5U		5U	5U	
Metals									
Total Arsenic	50					5	7.8/25U	10U/11	
Dissolved Arsenic				10U	10U		10U/13	5U/6.6	

Notes: Minimum/Maximum concentrations are shown when more than one sampling event per year.

MCL = Maximum Contaminant Level; [Proposed MCL].

U = Undetected at value where so indicated. D = Detected at approximate concentration indicated.

* Proposed MCL of 170 ug/L for total 1,2-Dichloroethene (70 for Cis- and 100 for Trans-).

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-15

Analyte (ug/L)	MCL	1985	1986	1987	1988	1989	1990	1991	1992
Herbicides									
2,4,5-T				1U	1U		.2U	.2U	
2,4-D	100 [70]			1U	1U		1.2U	1.2U	
2,4,5-TP (Silvex)	50						.17U	.17U	
Pesticides									
alpha-BHC							0.15	0.14/0.15	
beta-BHC							.05U	.05U	
delta-BHC							0.12	.05U/0.13	
gamma-BHC (Lindane)	4[0.2]			.19/.35	.14/.35	0.25	.13/.19	0.13/0.16	
4,4'-DDD				.1U	.1U		.1U/1U	.1U	
4,4'-DDE				.1U	.1U		.1U/1U	.1U	
4,4'-DDT				.1U	.1U		.1U/1U	.1U	
Aldrin				.1U	.1U		.05U	.05U	
Dieldrin				.1U/.25	.1U/.20	D(.14-.26)	.17/.20	0.31/0.33	
Endrin	0.2								
Chlordane	[2]								
Heptachlor	[.4]								
Methoxychlor	100 [400]				.5U				
Toxaphene	5 [3]				5U				
Volatile Organics									
Acetone								10U	
Chlorobenzene								5U	
1,2-Dichloroethene	[170*]								
1,1,2-Trichloroethane								5U	
Trichloroethene	5							5U	
Xylene	[10,000]			1U	1U		5U	5U	
Metals									
Total Arsenic	50						5U/10U	5U	
Dissolved Arsenic				10U	10U		5U	5U	

Notes: Minimum/Maximum concentrations are shown when more than one sampling event per year.

MCL = Maximum Contaminant Level; [Proposed MCL].

U = Undetected at value where so indicated. D = Detected at approximate concentration indicated.

* Proposed MCL of 170 ug/L for total 1,2-Dichloroethene (70 for Cis- and 100 for Trans-).

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-16

Analyte (ug/L)	MCL	1985	1986	1987	1988	1989	1990	1991	1992
Herbicides									
2,4,5-T				1U	1U		.2U/1U	.8U	
2,4-D	100 [70]			1U	1U		1.2U/6U	4.8U	
2,4,5-TP (Silvex)	50						.17U/2.5	2.9/3.1	
Pesticides									
alpha-BHC							5.8	0.9/4.5	
beta-BHC							1.3	0.41/1.6	
delta-BHC							1.6	0.28/1.4	
gamma-BHC (Lindane)	4[0.2]			.1U/.60	.1U/1.58	0.11	.5U	.5U	
4,4'-DDD				.1U	.1U/.132	0.39	1U	.1U/1U	
4,4'-DDE				.1U	.1U		1U	.1U/1U	
4,4'-DDT				.1U	.1U		1U	.1U/1U	
Aldrin				.1U/4.69	.1U/3.4	D (<2.5)	.5U	.05U/.5U	
Dieldrin				.1U	.1U	0.14	1U	.1U/1U	
Endrin	0.2								
Chlordane	[2]				1U/.167				
Heptachlor	[.4]								
Methoxychlor	100 [400]								
Toxaphene	5 [3]								
Volatile Organics									
Acetone								10U	
Chlorobenzene								5U	
1,2-Dichloroethene	[170*]								
1,1,2-Trichloroethane									
Trichloroethene	5								
Xylene	[10,000]			1U	1U/5U		5U	5U	
Metals									
Total Arsenic	50					5	5U	10U	
Dissolved Arsenic				10U	10U/50		5U	5U/10U	

Notes: Minimum/Maximum concentrations are shown when more than one sampling event per year.

MCL = Maximum Contaminant Level; [Proposed MCL].

U = Undetected at value where so indicated. D = Detected at approximate concentration indicated.

* Proposed MCL of 170 ug/L for total 1,2-Dichloroethene (70 for Cis- and 100 for Trans-).

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-17

Analyte (ug/L)	MCL	1986	1987	1988	1989	1990	1991
Herbicides							
2,4,5-T			1U	1U		4U/20U	4U/20U
2,4-D	100 [70]		1U	1U/14		24U/120U	12U/24U
2,4,5-TP (Silvex)	50				40	17U/17	8.5/12
Pesticides							
alpha-BHC						40	30/61
beta-BHC						6.6	2.5U/15
delta-BHC						50	16/93
gamma-BHC (Lindane)	4[0.2]	24.9/130	.1U/9.86	69.1/84	47/59	25/40	16/33
4,4'-DDD			.1U	.1U		10U	5U/10U
4,4'-DDE			.1U	.1U	1	10U	5U/10U
4,4'-DDT			.1U	.1U/3.7		10U	5U/10U
Aldrin			.1U/.97	.1U/12	2.5	5U	2.5U/5U
Dieldrin			.1U	.1U	1	10U	5U/10U
Endrin	0.2						
Chlordane	[2]						
Heptachlor	[.4]						
Methoxychlor	100 [400]			12U			
Toxaphene	5 [3]			5U/120U			
Volatile Organics							
Vinyl Chloride	2					U	U
Acetone						U	100/200U
Carbon Disulfide						25U	U
1,1-Dichloroethene	7					U	U
1,2-Dichloroethene	[170*]					U	U
Chloroform						U	U
1,2-Dichloroethane	5					25U	U
Trichloroethene	5					U	100U
1,1,2-Trichloroethane						25U	100U
Benzene	5					25U	U
Tetrachloroethene	[5]					U	U
Toluene						U	U
Chlorobenzene	[100]					420	310/540
Ethylbenzene	[700]					25U	U
Xylene	[10,000]		1U/337	1U/5.8		5U/25U	12U/100U
Metals							
Total Arsenic	50				9/17	18/25U	21/68
Dissolved Arsenic			10U/10	10U	7/11	10U/15	19/62

Notes:

Minimum/Maximum concentrations are shown when more than one sampling event per year.

MCL = Maximum Contaminant Level; [Proposed MCL].

* Proposed MCL of 170 for total 1,2-Dichloroethene (70 for Cis plus 100 for Trans).

U = Undetected at value where so indicated.

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-18

Analyte (ug/L)	MCL	1987	1988	1989	1990	Jun-90	1991	Jun-91
Herbicides								
2,4,5-T		1U	1U		.2U/.4U	[.2U]	.2U	[3.9U]
2,4-D	100 [70]	1U/2.1	1U		1.2U/2.4U	[1U]	1.2U	[15U]
2,4,5-TP (Silvex)	50				.34/.38	[I]	0.56/0.71	[1.3J]
Pesticides								
alpha-BHC					5.6	[6.8]	7.3/8.2	[8.2]
beta-BHC					.5U	[.2]	.5U/0.88	[.5U]
delta-BHC					1.8	[2.9]	2.9/3	[3.1]
gamma-BHC (Lindane)	4[0.2]	2.44/155	1.2/3.51	2.9	.87/1.6	[1.8]	1.2/1.7	[1.4]
4,4'-DDD		.1U	.1U/1.32	.27/.45	1U	[.1U]	1U	[1U]
4,4'-DDE		.1U/.28	.1U	U/.27	1U	[.1U]	1U	[1U]
4,4'-DDT		.1U/.36	.1U	.13/.32	1U	[.1U]	1U	[1U]
Aldrin		.1U/12.6	.1U	.1/.2	.5U	[.5U]	.5U	[.5U]
Dieldrin		.19/.31	.1U/1.75	.33/.42	1U	[.1U]	1U	[1U]
Endrin	0.2		.1U			[.1U]		[1U]
Endosulfane I						[.05U]		[.5U]
Endrin Ketone						[.1U]		
Chlordane	[2]		.1U/.405			[.5U]		[NA]
Heptachlor	[.4]		.1U					[.5U]
Methoxychlor	100 [400]		.5U			[.5U]		
Toxaphene	5 [3]		5U					[10U]
Volatile Organics								
Vinyl Chloride	2					[10]	U	[10U]
Acetone						[10U]	10U	[10U]
Carbon Disulfide					5U		U	[5U]
1,1-Dichloroethene	7					[5U]	U	[5U]
1,2-Dichloroethene	[170*]						5U/15	[5U]
Chloroform						[5U]	U	[5U]
1,2-Dichloroethane	5				15	[19]	U/11	[13]
Trichloroethene	5					[5U]	5U	[5U]
1,1,2-Trichloroethane					17	[21]	12 / 20	[16]
Benzene	5				5U	[5U]	U	[5U]
Tetrachloroethene	[5]					[5U]	U	[5U]
Toluene						[5U]	U	[5U]
Chlorobenzene	[100]				110	[100J]	100/150	[120]
Ethylbenzene	[700]				5U	[5U]	U	[5U]
Xylene	[10,000]	1U/67.4	1U/5U		5U/12U	[5U]	5U	[5U]
Metals								
Total Arsenic	50			23/28	5U	[10U]	7.4/10	[10U]
Dissolved Arsenic		10U	10U	5U/90	5U	[10U]	5U	[10U]

Notes:

Minimum/Maximum concentrations are shown when more than one sampling event per year.

[U.S. EPA Split Sample]

MCL = Maximum Contaminant Level; [Proposed MCL].

* Proposed MCL of 170 ug/L = 70 for Cis plus 100 for Trans.

U = Undetected at value where so indicated.

J = Estimated Value.

I = Invalidated Data.

NA = Not Analyzed.

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-19

Analyte (ug/L)	MCL	1987	1988	1989	1990	Jun-90	1991	Jun-91
Herbicides								
2,4,5-T		1U/3.6	1U		.8U/17U	[.2U]	4U	[3.9U]
2,4-D	100 [70]	1U	1U/5.9		4.9/120U	[1U]	24U	[15U]
2,4,5-TP (Silvex)	50			30	1.7/35	[43J]	21/24	[22J]
Pesticides								
alpha-BHC					99	[68]	60/77	[84]
beta-BHC					19	[7.2]	12 / 14	[13]
delta-BHC					10U	[3]	10U	[3.5]
gamma-BHC (Lindane)	4[0.2]	105/212	137/180	110/130	130/140	[100]	98/120	[110]
4,4'-DDD		.1U/.16	.1U		20U	[.1U]	20U	[.5U]
4,4'-DDE		.1U	.1U/.269		20U	[.1U]	20U	[.5U]
4,4'-DDT		.1U	.1U/.863		20U	[.1U]	20U	[.5U]
Aldrin		3.69/15.2	6.15/20		10U	[.5U]	10U	[25U]
Dieldrin		.23/.58	.1U/.875		20U	[.39]	20U	[1.6]
Endrin	0.2					[.1U]		[.5U]
Endosulfan I						[.1]		[0.62]
Endrin Ketone						[.38]		
Chlordane	[2]		.1U/.450			[.5U]		[NA]
Heptachlor	[.4]		.1U/.101					[0.48]
Methoxychlor	100 [400]		5U			[.5U]		
Toxaphene	5 [3]		5U/50U					[5U]
Volatile Organics								
Vinyl Chloride	2				U	[10U]	U	[17U]
Acetone					U	[10U]	10U/62	[17U]
Carbon Disulfide					8.5U	U	U	[8.3U]
1,1-Dichloroethene	7				U	[5U]	U	[8.3U]
1,2-Dichloroethene	[170*]				U	U	U	[8.3U]
Chloroform					U	[5U]	U	[8.3U]
1,2-Dichloroethane	5				8.5U	[9]	U	[10]
Trichloroethene	5				U	[11]	U/6.1	[8.3U]
1,1,2-Trichloroethane					10	[12]	U/9.9	[8.3U]
Benzene	5				8.5U	[5U]	U	[8.3U]
Tetrachloroethene	[5]				U	[5U]	U	[8.3U]
Toluene					U	[5U]	U	[8.3U]
Chlorobenzene	[100]				160	[7J]	120/270	[190]
Ethylbenzene	[700]				8.5U	[5U]	U	[8.3U]
Xylene	[10,000]	1U	1U/5U		5U	[5U]	5U/12U	[8.3U]
Metals								
Total Arsenic	50			13000/18000	15100/19500	[1800J]	10300/16400	[21000]
Dissolved Arsenic		8000/22000	2800/19000	14000/17000	14800/22100	[10U]	8500/15100	[14000]

Notes:

Minimum/Maximum concentrations are shown when more than one sampling event per year.

[U.S. EPA Split Sample]

MCL = Maximum Contaminant Level; [Proposed MCL].

* Proposed MCL of 170 ug/L for total 1,2-Dichloroethene (70 for Cis plus 100 for Trans).

U = Undetected at value where so indicated.

J = Estimated Value.

NA = Not Analyzed.

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-20

Analyte (ug/L)	MCL	1985	1986	1987	1988	1989	1990	1991	1992
Herbicides									
2,4,5-T				1U	1U	U	.2U	.2U	
2,4-D	100 [70]			1U	1U	U	1.2U	1.2U	
2,4,5-TP (Silvex)	50						.17U	.17U	
Pesticides									
alpha-BHC							0.15	0.26/0.30	
beta-BHC							.05U	.05U/1U	
delta-BHC							0.12	.1U/0.29	
gamma-BHC (Lindane)	4[0.2]			.55/1.83	.1/.60	U	.47/1.1	0.84/0.99	
4,4'-DDD				.1U	.1U	U	.1U	.1U/.2U	
4,4'-DDE				.1U	.1U	U	.1U	.1U/.2U	
4,4'-DDT				.1U	.1U	U	.1U	.1U/.2U	
Aldrin				.39/.50	.24/.56	U	.05U	.05U/1U	
Dieldrin				.1U	.1U/.33	U	.1U	.1U/.2U	
Endrin	0.2								
Chlordane	[2]								
Heptachlor	[.4]								
Methoxychlor	100 [400]								
Toxaphene	5 [3]								
Volatile Organics									
Acetone								100U/250	
Chlorobenzene							NA	5U/50U	
1,2-Dichloroethene	[170*]							50U/100U	
1,2-Dichloroethane								50U	
1,1,2-Trichloroethane							NA	50U/100U	
Trichloroethene	5							1500/2100	
Xylene	[10,000]			1U	1U/5U	U	50U	5U/100U	
Metals									
Total Arsenic	50					6	5U	5U/10U	
Dissolved Arsenic				10U	10U		5U	5U	

Notes: Minimum/Maximum concentrations are shown when more than one sampling event per year (except non-detect at same limits).

MCL = Maximum Contaminant Level; [Proposed MCL].

* Proposed MCL of 170 ug/L for total 1,2-Dichloroethene (70 for Cis- and 100 for Trans-).

U = Undetected at value where so indicated.

NA = Not Analyzed.

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-24

Analyte (ug/L)	MCL	1985	1986	1987	1988	1989	1990	1991	1992
Herbicides									
2,4,5-T				1U	1U	U	.2U	.2U	
2,4-D	100 [70]			1U	1U	U	1.2U	1.2U	
2,4,5-TP (Silvex)	50						.17U	.17U	
Pesticides									
alpha-BHC							0.056	.060/0.064	
beta-BHC							.05U	.05U/0.068	
delta-BHC							.05U	.05U	
gamma-BHC (Lindane)	4[0.2]			.1U	.1U	U	.05U	.05U	
4,4'-DDD				.1U	.1U	U	.1U	.1U	
4,4'-DDE				.1U	.1U	U	.1U	.1U	
4,4'-DDT				.1U	.1U	U	.1U	.1U	
Aldrin				.1U	.1U	U	.05U	.05U	
Dieldrin				.1U	.1U/.63	U	.1U	.1U	
Endrin	0.2								
Chlordane	[2]								
Heptachlor	[.4]								
Methoxychlor	100 [400]				.5U	U			
Toxaphene	5 [3]				5U	U			
Volatile Organics									
Acetone								10U/13	
Chlorobenzene								U	
1,2-Dichloroethene	[170*]							U	
1,1,2-Trichloroethane								U	
Trichloroethene	5							U	
Xylene	[10,000]			1U	1U	U	5U	5U	
Metals									
Total Arsenic	50						5U	5U	
Dissolved Arsenic				10U	10U	U	5U	5U	

Notes: Minimum/Maximum concentrations are shown when more than one sampling event per year.

MCL = Maximum Contaminant Level; [Proposed MCL].

U = Undetected at value where so indicated.

* Proposed MCL of 170 ug/L for total 1,2-Dichloroethene (70 for Cis- and 100 for Trans-).

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-25

Analyte (ug/L)	MCL	1987	1988	1989	1990	1991	1992
Herbicides							
2,4,5-T		1U	1U		.2U	.2U	
2,4-D	100 [70]	1U	1U		1.2U	1.2U	
2,4,5-TP (Silvex)	50				.17U	.17U	
Pesticides							
alpha-BHC						.05U	
beta-BHC						.05U	
delta-BHC						.05U	
gamma-BHC (Lindane)	4[0.2]	.1U/.53	.1U	0.15	.05U	.05U	
4,4'-DDD		.1U	.1U		.1U	.1U	
4,4'-DDE		.1U	.1U		.1U	.1U	
4,4'-DDT					.1U	.1U	
Aldrin		.1U	.1U		.05U	.05U	
Dieldrin		.1U	.1U		.1U	.1U	
Endrin	0.2				.1U		
Chlordane	[2]				.5U		
Heptachlor	[.4]				.05U		
Methoxychlor	100 [400]				1U		
Toxaphene	5 [3]				1U		
Volatile Organics							
Acetone						10U	
Chlorobenzene						U	
1,2-Dichloroethene	[170*]					U	
1,1,2-Trichloroethane						U	
Trichloroethene	5					U	
Xylene	[10,000]	1U	1U		5U	5U	
Metals							
Total Arsenic	50			9	5U	5U	
Dissolved Arsenic		10U	10U		5U	5U	

Notes: Minimum/Maximum concentrations are shown when more than one sampling event per year.

MCL = Maximum Contaminant Level; [Proposed MCL].

U = Undetected at value where so indicated.

* Proposed MCL of 170 ug/L for total 1,2-Dichloroethene (70 for Cis- and 100 for Trans-).

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-26

Analyte (ug/L)	MCL	1987	1988	1989	1990	1991	1992
Herbicides							
2,4,5-T				U	.2U	.2U	
2,4-D	100 [70]				1.2U	1.2U	
2,4,5-TP (Silvex)	50				.17U	.17U	
Pesticides							
alpha-BHC					.05U	.05U	
beta-BHC					.05U	.05U	
delta-BHC					.05U	.05U	
gamma-BHC (Lindane)	4[0.2]		U		.05U	.05U	
4,4'-DDD					.1U	.1U	
4,4'-DDE					.1U	.1U	
4,4'-DDT					.1U	.1U	
Aldrin			U		.05U	.05U	
Dieldrin			U		.1U	.1U	
Endrin	0.2						
Chlordane	[2]						
Heptachlor	[.4]						
Methoxychlor	100 [400]						
Toxaphene	5 [3]						
Volatile Organics							
Acetone						10U	
Chlorobenzene					NA	U	
1,2-Dichloroethene	[170*]					U	
1,1,2-Trichloroethane					NA	U	
Trichloroethene	5					U	
Xylene	[10,000]				5U	5U	
Metals							
Total Arsenic	50			U, {10}	5U	5U	
Dissolved Arsenic				U,{16}	5U	5U	

Notes: Minimum/Maximum concentrations are shown when more than one sampling event per year; {Duplicate Sample}.

MCL = Maximum Contaminant Level; [Proposed MCL].

* Proposed MCL of 170 ug/L for total 1,2-Dichloroethene (70 for Cis- and 100 for Trans-).

U = Undetected at value indicated.

NA = Not Analyzed.

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-27

Analyte (ug/L)	MCL	1987	1988	1989	1990	1991	1992
Herbicides							
2,4,5-T					.2U/.5U	.2U	
2,4-D	100 [70]				.5U/1.2U	1.2U	
2,4,5-TP (Silvex)	50				.17U/.5U	.17U	
Pesticides							
alpha-BHC					0.12	.066/.12	
beta-BHC					.05U	.05U	
delta-BHC					.05U	.05U/0.064	
gamma-BHC (Lindane)	4[0.2]			.09/.11	.14/.22, (.15)	.12/0.23	
4,4'-DDD					.1U	.1U	
4,4'-DDE					.1U	.1U	
4,4'-DDT					.1U	.1U	
Aldrin					.05U	.05U	
Dieldrin					.1U	.1U	
Endrin	0.2				.1U	.1U	
Chlordane	[2]				.05U/.5U	.05U	
Heptachlor	[.4]				.05U	.05U	
Methoxychlor	100 [400]				.5U/1U	.5U	
Toxaphene	5 [3]				1U/5U	5U	
Volatile Organics							
Acetone					NA	10U	
Chlorobenzene					NA	U	
1,2-Dichloroethene	[170*]				NA	U/9.8	
1,1,2-Trichloroethane					NA	U	
Trichloroethene	5				NA	5U/10	
Xylene	[10,000]				5U	5U	
Metals							
Total Arsenic	50				5U/10U	5U	
Dissolved Arsenic					5U/10U	5U	

Notes: Minimum/Maximum concentrations are shown when more than one sampling event per year (except for non-detect at same limits).

MCL = Maximum Contaminant Level; [Proposed MCL].

* Proposed MCL of 170 ug/L for total 1,2-Dichloroethene (70 for Cis- and 100 for Trans-).

U = Undetected at value where so indicated. NA = Not Analyzed.

{Duplicate Sample}

Historical Groundwater Data from the Ortho-Chevron Facility.

Well: OWC-28

Analyte (ug/L)	MCL	1988	1989	1990	Jun-90	1991	Jun-91
Herbicides							
2,4,5-T				.2U/.5U	[.2U]	.2U	[3.9U]
2,4-D	100 [70]			.5U/1.2U	[1U]	1.2U	[15U]
2,4,5-TP (Silvex)	50			.17U/.5U	[.2U]	.17U	[1.1U]
Pesticides							
alpha-BHC				1.8	[1.6U]	1.8/1.9,{1.5/1.8}	[1.8J]
beta-BHC				.2U	[.6U]	.2U/.25U	[.5U]
delta-BHC				0.36	[.14]	.38/.53,{.34/.50}	[.5U]
gamma-BHC (Lindane)	4[0.2]	3.8,{3.9}	3.7/4.1{3.4}	3.5/3.9	[3.2]	3.2/4.1,{3.1/3.5}	[3.3J]
4,4'-DDD				.4U/1U	[.12U]	.4U/.5U	[1U]
4,4'-DDE				.4U/1U	[.12U]	.4U/.5U	[1U]
4,4'-DDT				.4U/1U	[.12U]	.4U/.5U	[1U]
Aldrin				.05U/.2U	[.5U]	.2U/.25U	[.5U]
Dieldrin		U		.4U	[.12]	.4U/.5U	[1U]
Endrin	0.2				[.12U]	.4U/.5U	[1U]
Endosulfan I							[.5U]
Endrin Ketone							
Chlordane	[2]			.2U/.5U	[.5U]	.2U/.25U	[NA]
Heptachlor	[.4]					.2U/.25U	[.5U]
Methoxychlor	100 [400]			2U/5U	[.6U]	2U/.25U	
Toxaphene	5 [3]			4U/50U		20U/25U	[10U]
Volatile Organics							
Vinyl Chloride	2					U	[10U]
Acetone					[10U]	5.1 {10U}	[10U]
Carbon Disulfide				NA		U	[5U]
1,1-Dichloroethene	7					U	[5U]
1,2-Dichloroethene	[170*]					5U	[5U]
Chloroform						U	[5U]
1,2-Dichloroethane	5					U	[5U]
Trichloroethene	5				[5U]	5U	[5U]
1,1,2-Trichloroethane				NA	[5U]	U	[5U]
Benzene				NA		U	[5U]
Tetrachloroethene	[5]					U	[5U]
Toluene						U	[5U]
Chlorobenzene	[100]			NA	[5U]	U	[5U]
Ethylbenzene	[700]			NA		U	[5U]
Xylene	[10,000]		17,{17}	5U	[5U]	5.1/8.4,{5.0/9.0}	[5U]
Metals							
Total Arsenic	50		35,{U}	5U/8.6	[10U]	5U/10U	[10U]
Dissolved Arsenic				5U/8.8	[10U]	5U/10U	[10U]

Notes:

Minimum/Maximum concentrations are shown when more than one sampling event per year.

{Duplicate Sample} Not shown where non-detect at same detection limits.

[U.S. EPA Split Sample]

MCL = Maximum Contaminant Level; [Proposed MCL].

* Proposed MCL of 170 ug/L for total 1,2-Dichloroethene (70 for Cis- and 100 for Trans-).

U = Undetected at value where so indicated.

J = Estimated Value.

NA = Not Analyzed.